REMARKS

Claims 1-59 are presently pending, of which Claims 1-36 and 40-59 have been withdrawn from consideration.

Rejection of Claims 37 and 38 under 35 U.S.C. § 102

The Examiner rejected Claims 37 and 38 under 35 U.S.C. § 102(e) as being anticipated by Hansen *et al.* (U.S. Patent 6,348,995).

Hansen '995 discloses in Figures 5A and 5B a polarizer device 45 that includes a grid of closely spaced conductive elements 46 supported on a substrate 47. The upper surface 48 of the conductive elements has been given a texture. It is respectfully submitted, however, that the conductive elements 46 are not subwavelength moth-eye optical microstructures.

Applicant's claimed invention includes a plurality of moth-eye microstructures. As described on page 5, lines 18-29, a moth-eye anti-reflection surface is one in which the reflection of light is reduced by the presence of a regular array of small protuberances covering the surface. The spacing of the protuberances is less than the wavelength of light for which anti-reflection is sought. A moth-eye surface can be understood in terms of a surface layer in which the refractive index varies gradually from unity to that of the bulk material. Without such a layer, the Fresnel reflection coefficient at an interface of two media is equal to $((n_1 - n_2)/(n_1 + n_2))^2$, where n_1 and n_2 are the refractive indices of the media. However, if there is a gradual change of refractive index, net reflectance can be regarded as the result of an infinite series of reflections at each incremental change in refractive index. Since each reflection comes from a different depth from the surface, each has a different phase. If a transition takes place over an optical distance of $\lambda/2$, all phases are present, there is destructive interference and the reflectance falls to zero.

The low-reflection property of moth eyes has been attributed to dense arrays of microscopic protuberances that exhibit little or no diffraction or scattering because (1) the dimensions and pitches of the protuberances are smaller than the shortest wavelength of incident light in the wavelength range of interest and (2) a dense array of protuberances provides a gradual transition in the effective index of refraction from open space to a bulk solid material, so that an abrupt refractive index change, which would generate reflections, is not present. There is no disclosure in Hansen '995 that the closely spaced conductive elements are antireflective.

The moth-eye structure greatly increases transmission of light through the structure. As shown in Figure 12, and described on page 11, line 8 through page 12, line 7, it is known that essentially zero percent of the light component that is perpendicular to the linear moth-eye rows is reflected at each moth-eye boundary because the moth-eye acts as an anti-reflection surface in this direction. It is also known that approximately 4% of the light component which is parallel to the linear moth-eye is reflected at each linear moth-eye boundary because the light wave sees a flat surface rather than a moth-eye surface. Thus, with sufficient moth-eye layers, substantially all of the light component which is parallel to the linear moth-eye structures is reflected and only the light perpendicular to the linear moth-eye structures is transmitted therethrough to create a linear reflecting polarizer.

There is no disclosure in Hansen '995 that the closely spaced conductive elements are moth-eye structures. Thus, Hansen '995 does not disclose moth-eye optical microstructures disposed on one another and therefore, the claims are not anticipated.

Rejection of Claims 37-39 under 35 U.S.C. § 103

The Examiner rejected Claims 37-39 under 35 U.S.C. § 103(a) as being unpatentable over Ouderkirk *et al.* (U.S. Patent 6,262,842) in view of Hansen *et al.* (U.S. Patent Publication 2002/0015135).

It is respectfully submitted that Ouderkirk and Hansen *et al.*, taken individually or in combination, fail to teach or suggest all the limitations of Claims 37-39. Specifically, both Ouderkirk and Hansen '135 fail to teach moth-eye microstructures. Hansen '135 discloses a wire grid polarizing beam splitter, but this is clearly not a moth-eye microstructure. The general cross-section of the grid elements of the polarizing beam splitter is trapezoidal or rectangular in nature. See paragraph 116 of Hansen '135.

Accordingly, the rejection is respectfully traversed.

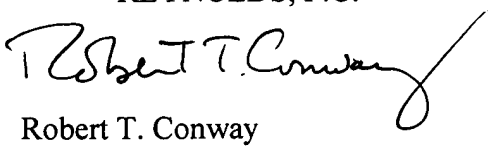
CONCLUSION

In view of the above amendments and remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If

the Examiner believes that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned.

Respectfully submitted,

HAMILTON, BROOK, SMITH & REYNOLDS, P.C.



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